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(54) Automatic Watering System

(57) An automatic watering system
comprises a receptacle (1) for

containing water and support means
(2) having an upper surface spaced
above the bottom of the receptacle.
Water is drawn via one or more wicks
(7, 8) passing through apertures (3) in
the support means (2). Water drawn
up by the wick(s) (7, 8) is distributed
by means of a capillary mat (9) for
watering of, for example, potted plants
(10) which can be positioned on the
surface of the mat. Alternatively,
plants may be grown in earth which is
laid directly over the mat (9).

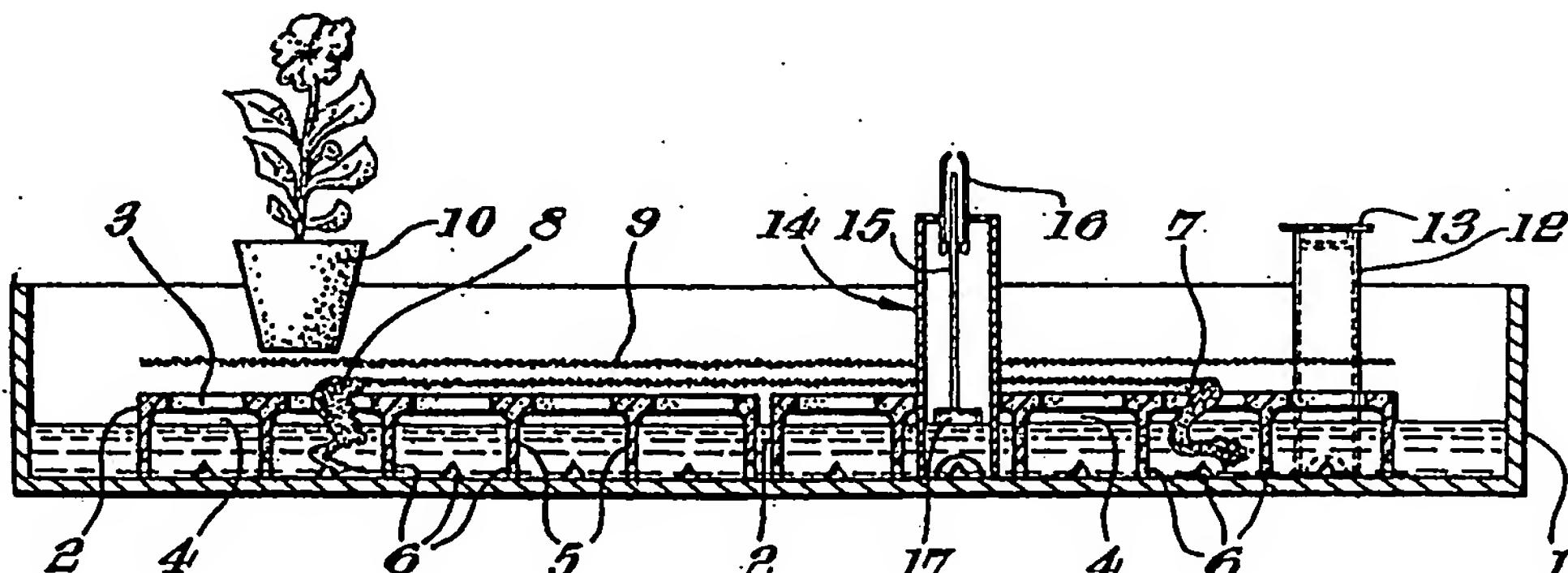


Fig. 1.

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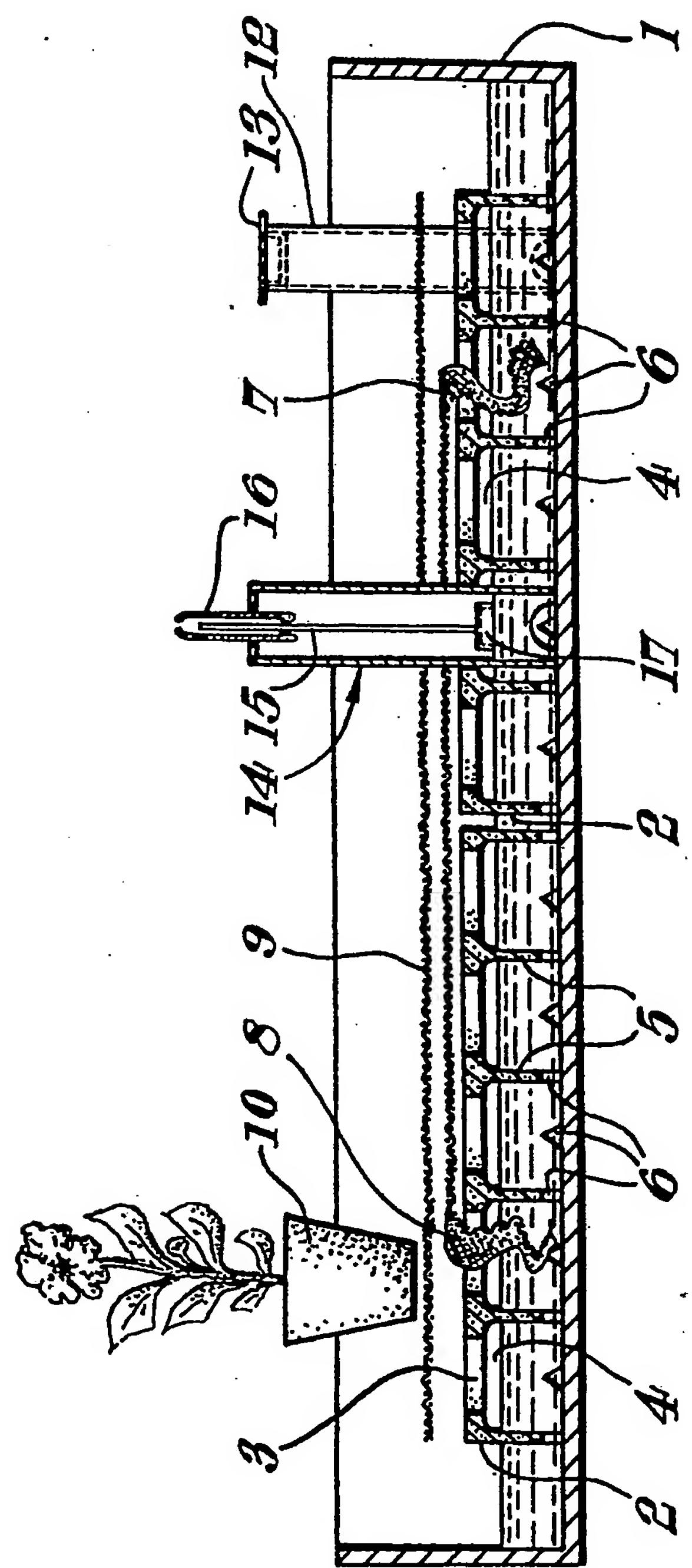


Fig. I.

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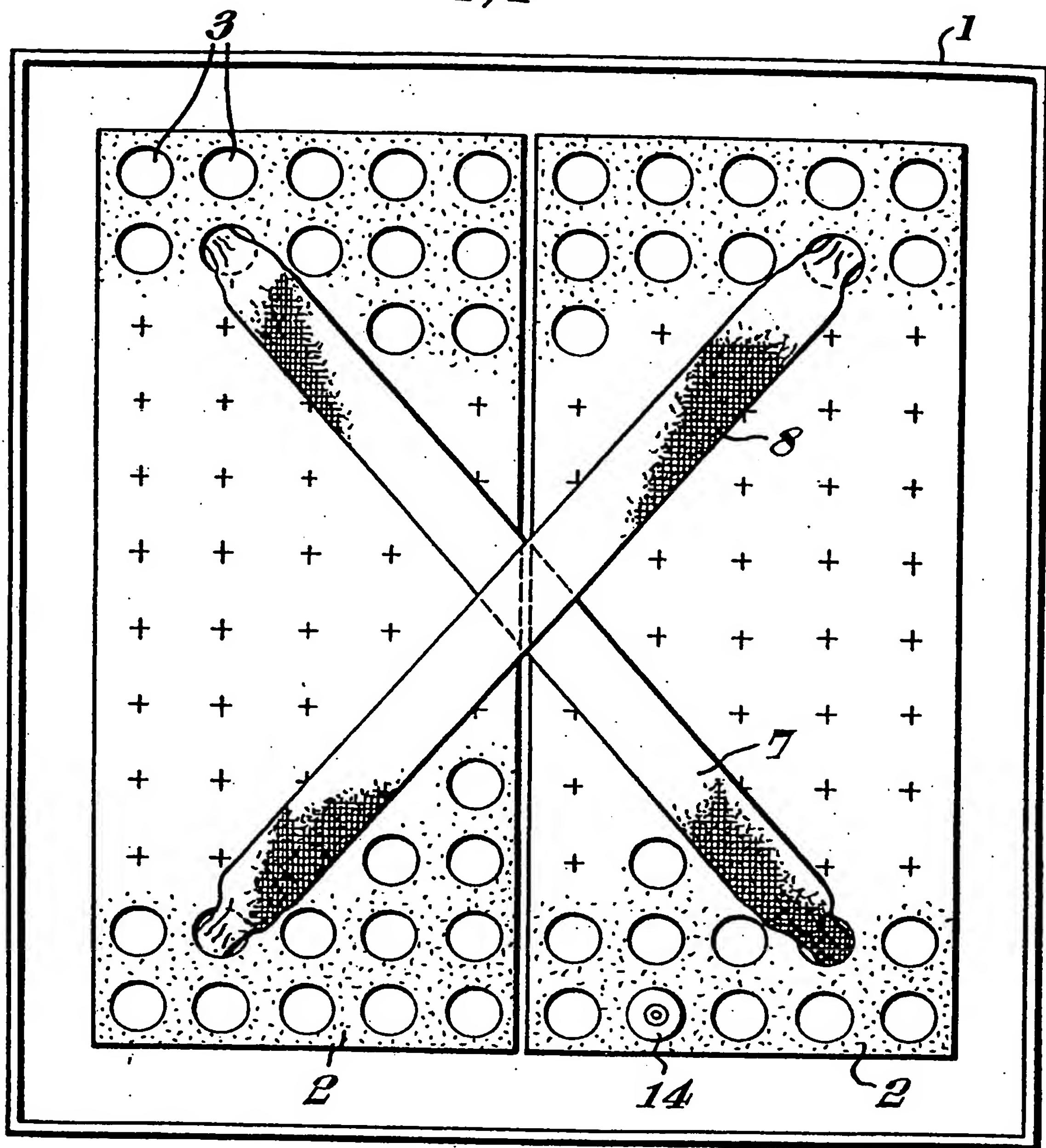


Fig. 2.

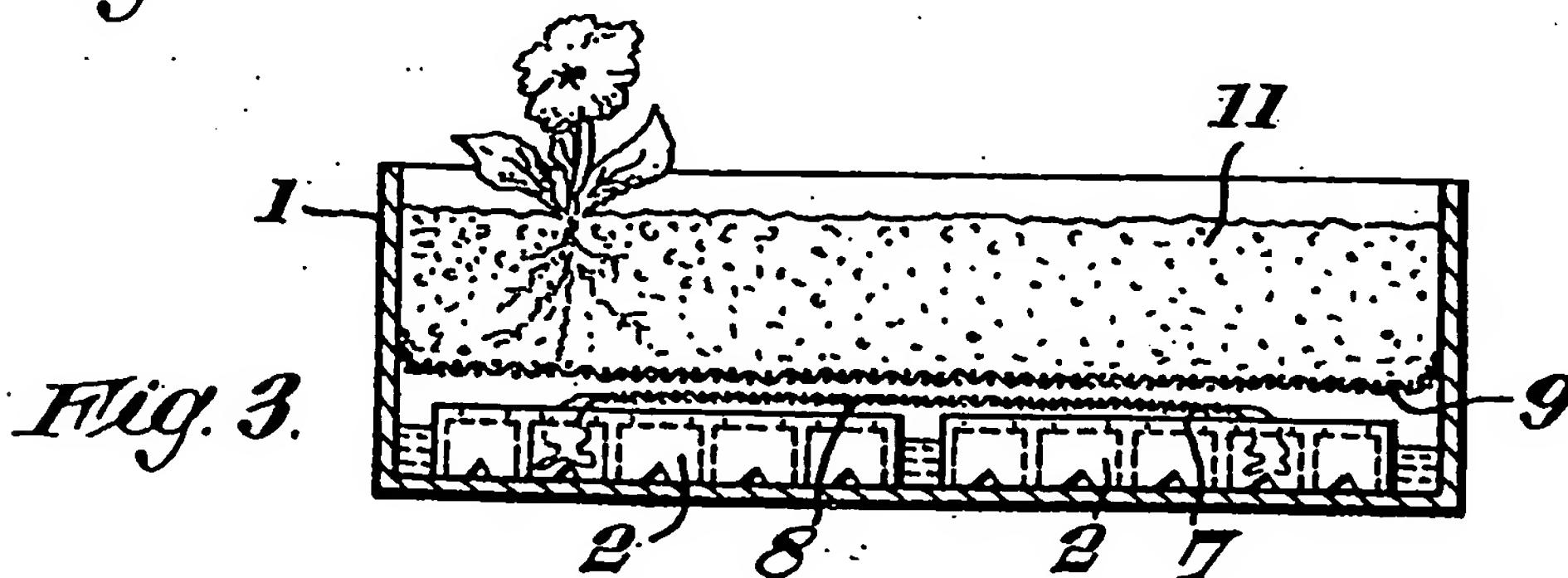


Fig. 3.

SPECIFICATION
Automatic Watering System

The present Invention relates to an automatic watering system.

5 In one aspect, the present invention provides an automatic watering system comprising a receptacle for containing water, support means having an upper surface which is spaced above the bottom of the receptacle and has apertures 10 therein for communication, in use, with the water, at least one wick extending through an aperture or apertures for drawing up water, and a capillary mat located over the support member and in contact with the wick(s).

15 Thus, in use, the wick(s) draw up, from the receptacle, water which is then distributed by the mat e.g. for watering, by further capillary action, potted plants placed thereon or for supplying water to a layer of earth laid over the mat.

20 Such systems may be used for the automatic watering of, for example, potted plants on display in shops, and indoor plants such as are frequently provided in offices and commercial buildings such as banks and hotels.

25 The receptacle may be a shallow tray or trough, for potted plants, or, where earth is to be laid directly over the mat, a deeper trough or tub. The overall shape is, of course, immaterial and will usually be determined by aesthetic 30 considerations.

In a preferred embodiment, the support means may comprise one or more support members, for example of expanded plastics material such as expanded polystyrene. Such a support member 35 may conveniently be of cellular or honeycombe construction, the apertures communicating with cells or chambers separated by walls which serve to reinforce the member. Where such cellular construction is used, the arrangement should be 40 such as to permit movement of water between cells—e.g. by mounting the member in a receptacle having a ribbed bottom or by providing cutouts in the cell walls.

Such a cellular construction could also be 45 formed by interlocking walls of strip material supporting an apertured sheet which forms said upper surface of the member.

The wick and mat may be of any suitable 50 woven material: the use of a non-woven web of synthetic fibre material such as polyester is preferred.

Although a single wick may be used for small areas, in many cases two or more wicks may be 55 necessary. The or each wick may conveniently be in the form of a flat strip, and preferably both its ends are, in use, immersed in water.

The wick(s) could, of course, be formed integrally with the mat, but the use of separate 60 wicks is preferable for flexibility of construction for different sizes and shapes of receptacle.

In another aspect, the Invention provides a kit of parts for constructing a watering system as described above, comprising at least one support

65 member having a surface having apertures therein and means for, in use, supporting the surface in spaced relationship from the bottom of a receptacle, at least one wick adapted to extend through an aperture of the support member, and a 70 capillary mat.

An exemplary embodiment of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a cross-section through an 75 automatic watering system in accordance with the Invention;

Figure 2 is a plan view of the system of figure 1 with the mat removed; and

Figure 3 is a view similar to Figure 1 showing 80 an alternative use of the system.

Referring to the drawings, an automatic watering system comprises a receptacle in the form of a tray 1, which, in use, is partially filled with water. In the tray are disposed a pair of 85 support members 2, of, for example, expanded polystyrene. Each support member has in its upper surface a plurality of apertures 3 which communicate with open-bottomed cavities 4 separated by walls 5. The walls serve to provide 90 the support member with strength and stiffness, and are provided with cutouts 6 so that movement of water between cavities is not impeded.

A wick 7 in the form of a flat strip of capillary 95 material is laid diagonally across the support members 2, and each end of the wick extends through one of the apertures 3 and into the cavity below, so that the wick can draw up water by capillary action. A second wick 8 is similarly 100 provided. The wick may, for example take the form of a non-woven web of polyester fibre such as Floratex 80, marketed by I.C.I. Ltd. as part of their "Cambrelle" range (Cambrelle and Floratex are I.C.I. trademarks). The number and size of the 105 wicks employed will, of course depend on many factors such as the wick material, the size of the tray, atmospheric conditions and the amount of water required by the plants. As a guide, it may be mentioned that two 50 mm wide strips of 110 "Floratex 80" have been found satisfactory for use with a 500 mm square tray.

Over the wicks is laid a capillary mat 9, which may likewise be of "Floratex 80". The mat serves to distribute the water drawn up by the wicks over 115 the surface of the support members, and in this way a satisfactory supply of water can be obtained to potted plants 10 positioned on the surface of the mat, as illustrated in Figure 1.

In the alternative arrangement, shown in Figure 120 3, the space above the mat may be filled with a layer of earth in which plants may be grown directly, the mat providing a kind of artificial water table.

For convenience in maintaining the water level 125 in the bottom of the tray, the system also has a filler tube 12 (with a cap 13), and a water level indicating device 14 in which a pointer 15, visible through a transparent tube 16, indicates the position of a float 17.

It will be observed that the support members 2 shown have a uniform array of apertures 3. Whilst this is not essential, it is convenient in that a single pattern of support member may be used 5 and cut to size for various different sizes of trays (the use of expanded plastics material, which is easy to cut, is particularly advantageous in this respect). It is, however, preferable that the members have apertures in addition to those 10 required for the wicks, to provide for drainage back into the tray and also to provide root aeration.

Claims

1. An automatic watering system comprising a 15 receptacle for containing water, support means having an upper surface which is spaced above the bottom of the receptacle and has apertures therein for communication, in use, with the water, at least one wick extending through an aperture 20 or apertures for drawing up water, and a capillary mat located over the support member and in contact with the wick(s).
2. An automatic watering system according to claim 1, in which the support means is of cellular 25 construction, the apertures communicating with open-bottomed cells separated by walls, means being provided to permit flow of water between the cells.
3. An automatic watering system according to

- 30 claim 1 or 2, in which the support means comprises one or more support members of expanded plastics material.
 4. An automatic watering system according to claim 3, in which the or each support member is 35 of expanded polystyrene.
 5. An automatic watering system according to any one of the preceding claims, in which the or each wick is in the form of a flat strip.
 6. An automatic watering system according to 40 claim 5, in which the or each wick is in the form of a non-woven web of synthetic fibre.
 7. An automatic watering system according to any one of the preceding claims, in which the mat is in the form of a non-woven web of synthetic 45 fibre.
 8. An automatic watering system according to claim 6 or 7, in which the synthetic fibre is polyester.
 9. An automatic watering system substantially 50 as herein described with reference to the accompanying drawings.
 10. A kit of parts for constructing a watering system as described above, comprising at least one support member having a surface having 55 apertures therein and means for, in use, supporting the surface in spaced relationship for the bottom of a receptacle, at least one wick adapted to extend through an aperture of the support member, and a capillary mat.

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